

**DO NOT OPEN THIS TEST BOOKLET TILL YOU ARE ASKED TO DO SO.**

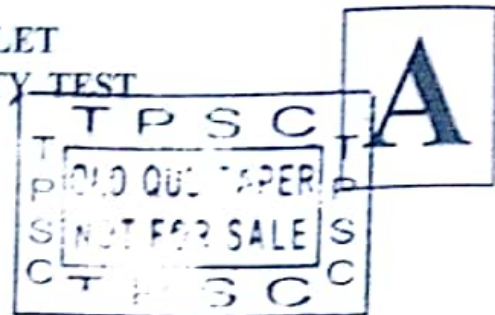
TR/DLPI/CE/II/A/14

Test Booklet Series

**TEST BOOKLET  
GENERAL ABILITY TEST  
PART-II**

\_\_\_\_\_  
(Signature of the Candidate)

\_\_\_\_\_  
(Invigilator's Signature)



Time allowed : 1 hour 30 mins (One hour & thirty mins)

Maximum Marks - 60

**INSTRUCTIONS**

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
2. ENCODE CLEARLY THE TEST BOOKLET SERIES IN THE APPROPRIATE PLACE IN THE ANSWER SHEET BY BLACK BALL POINT PEN ONLY.
3. This Test Booklet contains 60 items (questions). Each question, carrying 1 (one) mark only, has four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider the most appropriate. In any case, choose ONLY ONE response for each item.
4. You have to mark all your responses by Black Ball Point Pen only on the separate Answer Sheet provided. See directions in the Answer Sheet.
5. All items carry equal marks.
6. Before you proceed to mark in the Answer Sheet, the responses to various items in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per instruction sent to you with your Admission Certificate.
7. After you have completed filling in responses on the Answer Sheet and the examination is completed, you should hand over the Answer Sheet to the Invigilator only. You are permitted to take the Test Booklet with you.
8. Sheets for rough work are appended on the Test Booklet at the end.
9. **Penalty for wrong answers :**
  - (i) For each question for which a wrong answer / multiple answer has been given by the candidate, a  $\frac{1}{2}$  (half) mark will be deducted as penalty.
  - (ii) If a question is left blank, i.e. no answer is given by the candidate ; there will be no penalty for that question.

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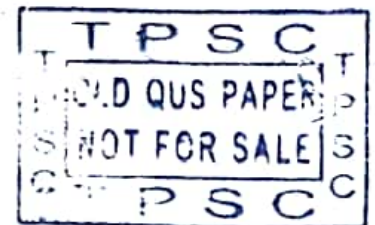
Four options are given against each of the following questions. Select the best / correct option from among the four options and encode in the answer sheet by using **Black Ball Point Pen** only as per example given below :

Example : The wheel in our National Flag has

- |               |               |
|---------------|---------------|
| (a) 20 spokes | (b) 24 spokes |
| (c) 30 spokes | (d) 25 spokes |

Answer : (a)  (c) (d)

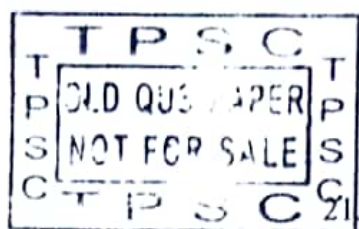
- |   |   |
|---|---|
| <p>1. Poisson's ratio is</p> <p>(a) Linear strain/Lateral strain</p> <p>(b) Linear strain/Linear stress</p> <p>(c) Lateral strain/Lateral stress</p> <p>(d) Lateral strain/Linear strain</p> <p>2. The ratio of stress to volumetric strain is known as</p> <p>(a) Bulk modulus</p> <p>(b) Young modulus</p> <p>(c) Modulus of rigidity</p> <p>(d) None of the above.</p> <p>3. Highway Capacity Manual (HCM) has suggested the levels of services namely</p> <p>(a) A, B, C, D, E, F</p> <p>(b) A, B, C, D, E, F, G</p> <p>(c) A, B, C, D, E, F, G, H</p> <p>(d) A, B, C, D, E, F, G, H, I</p> | <p>4. An imaginary beam for which the load diagram is <math>M/EI</math>, the diagram will be known as</p> <p>(a) Simply supported beam</p> <p>(b) Conjugate beam</p> <p>(c) Laminated beam</p> <p>(d) Fixed beam</p> <p>5. Gravity model is used in transportation planning process for</p> <p>(a) Spot speed study</p> <p>(b) Trip distribution</p> <p>(c) Gravity distribution</p> <p>(d) All of the above.</p> <p>6. For a well conditioned triangle, no angle should be less than</p> <p>(a) <math>45^\circ</math></p> <p>(b) <math>30^\circ</math></p> <p>(c) <math>15^\circ</math></p> <p>(d) <math>60^\circ</math></p> |
|---|---|



7. The aeration of water is done for removal of
  - (a) Hardness
  - (b) Colour
  - (c) Salinity
  - (d) None of the above.
8. 'Give way' sign is
  - (a) Mandatory sign
  - (b) Warning sign
  - (c) Informatory sign
  - (d) None of the above.
9. Priming of centrifugal pump is necessary
  - (a) if it is located above the reservoir level
  - (b) if it is located below reservoir level
  - (c) if delivery head is high
  - (d) None of the above.
10. The bottom diameter, top diameter and height of the slump cone are respectively
  - (a) 20 cm, 10 cm, 30 cm
  - (b) 30 cm, 20 cm, 40 cm
  - (c) 10 cm, 20 cm, 30 cm
  - (d) 20 cm, 10 cm, 10 cm
11. The standard sand now used in India is obtained from
  - (a) Dombivli (Mumbai)
  - (b) Gopalpur (Orissa)
  - (c) Ennore (Chennai)
  - (d) Jaipur (Rajasthan)
12. The ratio of moment produced at a joint to the moment applied at the other joint, without displacing it, is called
  - (a) Stiffness factor
  - (b) Carry over factor
  - (c) Distribution factor
  - (d) None of the above.
13. The effective size of soil is
  - (a)  $D_{10}$
  - (b)  $D_{20}$
  - (c)  $D_{30}$
  - (d)  $D_{40}$
14. Casagrande apparatus is used to determine
  - (a) Plastic limit
  - (b) Liquid limit
  - (c) Specific gravity
  - (d) All of the above.



15. For a simply supported beam of length ' $l$ ' and carrying a point load ' $w$ ' the deflection at the centre is
- $(Wl^3)/(48EI)$
  - $(Wl^2)/(48EI)$
  - $(Wl^3)/(16EI)$
  - $(5Wl^3)/(384EI)$
16. The graduations in a prismatic compass are from
- $0^\circ$  to  $180^\circ$
  - $0^\circ$  to  $90^\circ$
  - $0^\circ$  to  $360^\circ$
  - None of the above.
17. On a turning point
- only a back sight is taken
  - only a fore sight is taken
  - both fore sight and back sight are taken
  - None of the above.
18. The sum of interior angles of a closed traverse of  $N$  sides is equal to
- $(2N-1) \times 90^\circ$
  - $(2N-4) \times 180^\circ$
  - $(2N-1) \times 180^\circ$
  - None of the above.
19. The latitude of a line is obtained by multiplying its length by
- $\tan \phi$
  - $\sin \phi$
  - $\cos \phi$
  - All of the above.
20. With a rise in temperature, the sensitivity of the bubble tube
- decreases
  - increases
  - remains unaffected
  - None of the above.
21. The internal focussing lens is a
- Convex lens
  - Concave lens
  - Plano convex
  - None of the above.
22. The angle of intersections of the mirrors in an optical square is
- $60^\circ$
  - $40^\circ$
  - $30^\circ$
  - None of the above.
23. Disinfection of water is done by
- Filtration
  - Passing chlorine
  - Alum
  - None of the above.



24. Guidelines for the design of flexible pavements for low volume rural roads is
- IRC:SP:72-2007
  - IRC:SP:62-2006
  - IRC:SP:82-2009
  - IRC:SP:72-2000
25. The working edge of an alidade is
- ebonite edge
  - fiducial edge
  - graduated edge
  - All of the above.
26. The relationship between void ratio 'e' and porosity 'n' of a soil is given by
- $n = e/(1+e)$
  - $n = e/(1-e)$
  - $n = (1-e)/(1+e)$
  - $n = (1+e)/(1-e)$
27. Unit of Head way is
- Metre/sec
  - Metre/sec<sup>2</sup>
  - Seconds
  - None of the above.
28. Towards the computation of BSAD applications, the indicative VIB value for HCV (Laden condition) is
- 2.35
  - 2.86
  - 3.35
  - 4.50
29. The workability of concrete by slump test is expressed as
- mm/h
  - mm
  - mm<sup>2</sup>/h
  - None of the above.
30. For ordinary Portland cement the maximum expansion by Le-Chatelier's method should not exceed
- 2 mm
  - 5 mm
  - 7.5 mm
  - 10 mm
31. A channel section consist of
- Two webs
  - Two flanges
  - Two webs and one flange
  - One web and two flanges

32. Granite is mainly composed of

- (a) quartz and mica
- (b) feldspar and mica
- (c) quartz, feldspar and mica
- (d) None of the above.

33. The ratio of the volume of voids to the total volume of given soil mass is called

- (a) Porosity
- (b) Void ratio
- (c) Degree of saturation
- (d) Density index

34. The ratio of plasticity index to flow index is called

- (a) Consistency index
- (b) Liquidity index
- (c) Toughness index
- (d) Shrinkage index

35. The colour of fresh sewage

- (a) Blue
- (b) Grey
- (c) Green
- (d) None of the above.

36. The bending moment diagram for a simply supported beam with an eccentric point load will be

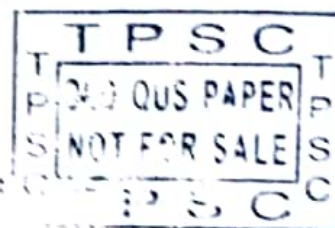
- (a) A triangle
- (b) A rectangle
- (c) A cubic parabola
- (d) None of the above.

37. Strain energy is given by

- (a)  $0.5 \times \text{stress} \times \text{volume}$
- (b)  $0.5 \times \text{stress} \times \text{strain}$
- (c)  $0.5 \times \text{strain} \times \text{volume}$
- (d)  $0.5 \times \text{stress} \times \text{strain} \times \text{volume}$

38. The unit of torque is

- (a) Newton
- (b) Newton/metre
- (c) Newton/metre<sup>2</sup>
- (d) Newton-metre



39. The shear stress on principal plane is

- (a) Maximum
- (b) Minimum
- (c) Zero
- (d) None of the above.

40. A coarse-grained soil has a voids ratio of 0.78 and specific gravity as 2.67. The critical gradient will be (at quick sand condition)

- (a) 0.75
- (b) 0.65
- (c) 0.94
- (d) None of the above.

41. When a body is subjected to shear stress, the modulus of rigidity is (where,  $1/m$  = Poisson's ratio,  $E$  = Modulus of elasticity)

- (a)  $(mE)/[2(m+1)]$
- (b)  $E/[2(m+1)]$
- (c)  $(mE)/[3(m+1)]$
- (d) None of the above.

42. The Philadelphia rod is a type of

- (a) solid staff
- (b) folding staff
- (c) telescopic staff
- (d) None of the above.

43. Spot speed is measured by

- (a) Enoscope
- (b) Endoscope
- (c) Speedoscope
- (d) None of the above.

44. The rule of water-cement ratio was established by

- (a) Terzaghi
- (b) W. Simms
- (c) Plowman
- (d) Duff Abrams

45. Speed to check design elements is equal to

- (a) 85th percentile speed
- (b) 98th percentile speed
- (c) 15th percentile speed
- (d) 78th percentile speed

46. Standard Axle load is

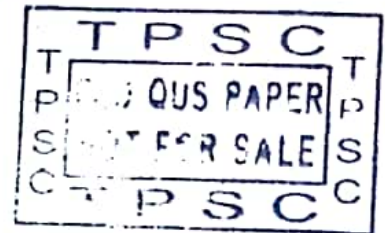
- (a) 90 KN
- (b) 60 KN
- (c) 80 KN
- (d) 100 KN

47. A commercial vehicle is defined as a vehicle of gross laden weight of

- (a) 3 tonnes or more
- (b) 2 tonnes or more
- (c) 1 tonne or more
- (d) All of the above.



48. The intensification of green house effect is mainly attributed to the increased level of
- carbon dioxide
  - carbon monoxide
  - chloro fluorocarbons
  - sulphur dioxide
49. The active earth pressure of a soil is defined as the lateral pressure exerted by soil
- when it is at rest
  - when the retaining wall has no movement relative to the backfill
  - when the retaining wall tends to move away from the backfill
  - when the relative wall moves into the soil
50. The co-efficient of earth pressure at rest is given by (where  $\mu$  = Poissons ratio)
- $\mu/(1-\mu)$
  - $(1+\mu)/\mu$
  - $(1-\mu)/\mu$
  - None of the above.
51. Vicat's apparatus is used to determine the
- Initial setting time of cement
  - Final setting time of cement
  - Normal consistency of cement
  - All of the above.
52. The product E.I is also known as
- Modulus of rigidity
  - Flexural rigidity
  - Stiffness
  - None of the above.
53. A soil has a bulk unit weight of 20.11 KN/m<sup>3</sup> and water content of 15%. If the soil partially dries to a unit weight of 19.42 KN/m<sup>3</sup> and voids ratio remains unchanged, water content will be
- 10%
  - 11%
  - 12%
  - None of the above.
54. For the design purpose of gravel roads and flexible pavements (low volume rural roads) recommended design life is
- 15 years
  - 10 years
  - 20 years
  - 5 years





55. Average Annual Daily Traffic is equal to (where,  $T$  = vehicle/day in non harvesting season,  $n$  = factor,  $t$  = period of harvesting season)
- $T + [(1.3nTt)/365]$
  - $T + [(1.5nTt)/365]$
  - $T + [(1.6nTt)/365]$
  - $T + [(1.2nTt)/365]$
56. Space mean speed is equal to (where  $d$  = distance,  $t_i$  = time taken by  $i^{\text{th}}$  vehicle,  $n$  = number of observation)
- $(nd)/\sum t_i$
  - $(2nd)/\sum t_i$
  - $(5nd)/\sum t_i$
  - None of the above.
57. Unit of traffic density is
- veh
  - veh/km
  - veh/km<sup>2</sup>
  - veh/km<sup>3</sup>
58. An imaginary line lying throughout the ground surface and having a constant inclination to the horizontal is a
- contour line
  - ridge line
  - contour gradient
  - All of the above.
59. Sieve analysis of Portland cement is performed on I.S sieve
- No 3
  - No 5
  - No 9
  - None of the above.
60. If the fineness modulus of sand is 2.7 it is graded as
- Coarse sand
  - Fine sand
  - Medium sand
  - None of the above.